

CLAIMS

1. An anisotropically conductive sheet comprising an anisotropically conductive sheet body formed by an elastic polymeric substance and having a plurality of conductive parts extending in a thickness-wise direction of the sheet body and an insulating part mutually insulating these conductive parts, and

10 a DLC film integrally formed on one or both surfaces of the anisotropically conductive sheet body so as to cover at least the insulating part.

2. The anisotropically conductive sheet according to claim 1, wherein the surface resistivity of the DLC film is 1×10^8 to $1 \times 10^{14} \Omega/\square$.

15 3. The anisotropically conductive sheet according to claim 1 or 2, wherein the thickness of the DLC film is 1 to 500 nm.

20 4. The anisotropically conductive sheet according to any one of claims 1 to 3, wherein the elastic polymeric substance forming the anisotropically conductive sheet body is silicone rubber.

25 5. The anisotropically conductive sheet according to any one of claims 1 to 4, wherein the DLC film is formed so as to cover the whole of one surface or the whole of both surfaces of the anisotropically conductive sheet body.

6. The anisotropically conductive sheet according to any one of claims 1 to 4, wherein a metal layer is

integrally formed on one surface of the anisotropically conductive sheet body so as to cover the conductive parts.

7. The anisotropically conductive sheet according to claim 6, wherein the DLC film is formed so as to cover the 5 surface of the metal layer.

8. The anisotropically conductive sheet according to claim 6 or 7, wherein the surface resistivity of the metal layer is at most $1 \times 10^{-2} \Omega/\square$.

9. The anisotropically conductive sheet according to 10 any one of claims 6 to 8, wherein the thickness of the metal layer is 5 to 1,000 nm.

10. A process for producing an anisotropically conductive sheet, which comprises the steps of producing an anisotropically conductive sheet body formed by an elastic 15 polymeric substance and having a plurality of conductive parts extending in a thickness-wise direction of the sheet body and an insulating part mutually insulating these conductive parts, and

integrally forming a DLC film on one or both surfaces 20 of the anisotropically conductive sheet body thus obtained by a PVD method so as to cover at least the insulating part.

11. The process according to claim 10 for producing the anisotropically conductive sheet, wherein the DLC film is formed at a temperature of at most 150°C.

25 12. The process according to claim 10 or 11 for producing the anisotropically conductive sheet, wherein an ion etching treatment is conducted on a surface, on which

the DLC film is to be formed, in the anisotropically conductive sheet body, and the DLC film is then formed.

13. An anisotropically conductive connector comprising a frame plate having openings and the
5 anisotropically conductive sheet according to any one of claims 1 to 9, which is arranged so as to close each of the openings in the frame plate and supported by an opening edge of the frame plate.

14. An anisotropically conductive connector suitable
10 for use in conducting electrical inspection of each of a plurality of integrated circuits formed on a wafer in a state of the wafer, which comprises:

a frame plate, in which a plurality of openings have been formed correspondingly to regions, in which electrodes
15 to be inspected have been arranged, in all the integrated circuits formed on the wafer, which is an object of inspection, and a plurality of anisotropically conductive sheets respectively arranged so as to close the openings in the frame plate and supported by their corresponding
20 opening edges of the frame plate, wherein the anisotropically conductive sheets are each composed of the anisotropically conductive sheet according to any one of claims 1 to 9.

15. An anisotropically conductive connector suitable
25 for use in conducting electrical inspection of each of a plurality of integrated circuits formed on a wafer in a state of the wafer, which comprises:

a frame plate, in which a plurality of openings have been formed correspondingly to regions, in which electrodes to be inspected have been arranged, in a plurality of integrated circuits selected from among the integrated 5 circuits formed on the wafer, which is an object of inspection, and a plurality of anisotropically conductive sheets respectively arranged so as to close the openings in the frame plate and supported by their corresponding opening edges of the frame plate, wherein the 10 anisotropically conductive sheets are each composed of the anisotropically conductive sheet according to any one of claims 1 to 9.

16. A probe for circuit inspection, which comprises a circuit board for inspection, on the surface of which 15 inspection electrodes have been formed in accordance with a pattern corresponding to a pattern of electrodes to be inspected of circuits, which are objects of inspection, and the anisotropically conductive sheet according to any one of claims 1 to 9 or the anisotropically conductive 20 connector according to claim 13, which is arranged on the surface of the circuit board for inspection.

17. A probe for circuit inspection that is suitable for use in conducting electrical inspection of each of a plurality of integrated circuits formed on a wafer in a 25 state of the wafer, which comprises:

a circuit board for inspection, on the surface of which inspection electrodes have been formed in accordance

with a pattern corresponding to a pattern of electrodes to be inspected in all the integrated circuits formed on the wafer, which is an object of inspection, and the anisotropically conductive connector according to claim 14,
5 which is arranged on the surface of the circuit board for inspection.

18. A probe for circuit inspection that is suitable for use in conducting electrical inspection of each of a plurality of integrated circuits formed on a wafer in a
10 state of the wafer, which comprises:

a circuit board for inspection, on the surface of which inspection electrodes have been formed in accordance with a pattern corresponding to a pattern of electrodes to be inspected in a plurality of integrated circuits selected
15 from among the integrated circuits formed on the wafer, which is an object of inspection, and the anisotropically conductive connector according to claim 15, which is arranged on the surface of the circuit board for inspection.

19. The probe for circuit inspection according to
20 claim 17 or 18, wherein a sheet-like connector composed of an insulating sheet and a plurality of electrode structures each extending through in a thickness-wise direction of the insulating sheet and arranged in accordance with a pattern corresponding to the pattern of the inspection electrodes
25 in the circuit board for inspection is arranged on the anisotropically conductive connector.

20. A circuit inspection apparatus comprising the

probe for circuit inspection according to any one of claims
16 to 19.